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"The Irish, Swedish, and Germans have the highest percentage of affections; the English, French, Scotch, and Americans, the lowest percentage. Out of the whole number examined, 1,162 were girls and 878 boys; 458 had some ametropia (some anomaly of refraction). Of the 1,162 girls, 290, or 24.9 per cent, were ametropic; of the 878 boys, 168, or 19.1 per cent, were ametropic; being a larger per cent of affection among the girls than among the boys.

"Out of the 2,040 pupils, 13, or 0.6 per cent, had strabismus; 94, or 4.6 per cent, were myopic; 202, or 9.9 per cent, were hypermetropic; 42, or 2.06 per cent, were astigmatic; 99, or 4.8 per cent, had spasm of accommodation; and 63, or 3.1 per cent, had latent hypermetropia.

"We find that hypermetropia predominates. If we add latent hypermetropia and spasm of accommodation, saying nothing of astigmatism, of which the majority was hypermetropic, we have 364 hypermetropes to 94 myopes, or nearly four times as many hypermetropes as myopes, or over twice as many as all the other affections taken together. In the table, as seen, all the grades, from the primary through the grammar school, high school, normal school, and university, are represented; but in no instance, excepting the Kansas State University, is there any thing like a gradual increase of myopia or any of the anomalies simply or collectively. In nearly all of the schools there seems to be a higher per cent of affection in the first years; then, a little later in the course, a marked diminution; and then again an increase. Probably many of those having some trouble after remaining in school for a short time drop out, which would account for the diminution; and then spasm of accommodation and latent hypermetropia becoming manifest later on, or perhaps developing into myopia, would account for the increase in this affection.

"School-life, however, as stated above, so far as I can gather by these examinations, has little or nothing to do in the development of these anomalies. That they exist, however, in a much greater degree than is generally supposed, is very evident; and that continuous use of the eyes having these errors of refraction, whether in the school-room or out of it, if not corrected, is sure to have its evil consequences. The importance of a recognition of the existence of these anomalies, of their extreme frequency, and of detecting and correcting them, is obvious enough. We should take into consideration that spasm of accommodation and latent hypermetropia frequently exist, and that these affections often develop into myopia; and if recognized early, and timely treated by rest and glasses, much suffering and irremediable troubles are averted. Cohn and others may have been able, twenty years ago, to trace the development of myopia to badly appointed school-rooms; but here in America our school-rooms are so carefully arranged as to light, seats, desks, ventilation, etc., that we can scarcely attribute to the work in the school-room the cause of anomalies. In a very great degree these errors of refraction are congenital, frequently they are latent, and, if the eyes were not overtaxed by near work, they would never become manifest. The evil arising from work in the school-room is that these errors of refraction are not perceived, and hence not corrected. If the teacher could be made to understand that the little pupils complaining of headache, pain through the temples, and weakness of the eyes, or dimness of vision, arose neither from stupidity nor desire to avoid study, but that these complaints were symptoms of some defect of the organ of vision, or, what would be better still, let a competent oculist carefully examine each child as he enters upon each year of study in the school-work, and his anomaly, if he have any, corrected, anomalies would gradually diminish."

COMMERCIAL GEOGRAPHY.

The Neglect of Native Fruit-Plants in California.

SINCE the settlement of California, its fruit-growing interests have rapidly gained great importance. It is remarkable, that, notwithstanding the economic value of this industry, hardly any attempts have been made to utilize the native fruit-plants; and Mr. H. Semler, who is so well conversant with the flora of California, has done good service in calling attention to the numerous plants that appear well worth being cultivated, and promise to become a source of considerable revenue. He states, that except the seeds

of the nut-pine, which are sometimes used as a dessert, only one or two species of blueberry (*Vaccinium*) are sold, although they are not cultivated. Hardly any attempts have been made to cultivate the numerous native berries. In a recent number of *Petermann's Mittheilungen* he draws attention to a number of these plants.

There is a good Californian raspberry (*Rubus leucodermis*). The European raspberry is cultivated with limited success only in the valley of the Hudson and in New Jersey, although its culture is made difficult by the extreme cold of winter. For this reason attempts were made to cultivate *Rubus strigosus* and *Rubus Occidentalis* (the red raspberry and the thimble-berry). By breeding and crossing these species, the raspberries now in use were obtained. These have been introduced into California, while the native raspberry of that State is neglected, although, even in its wild state, it has a better taste than the wild eastern berries.

In the same way the eastern blackberries and dewberries have been introduced, although two excellent species are native to the Pacific coast. Since the discovery of the 'Lawton' or 'New Rochelle,' numerous varieties of *Rubus villosus* have been cultivated, and plantations of great extent and value are found in California. No attempts, however, have been made at developing *Rubus ursinus*, a native of the Californian coast, which is used by farmers for making jams and jellies; nor has *Rubus pedatus* of the Sierra Nevada, which has small and sweet jet-black berries, attracted any attention.

Gooseberry-culture has so far been a failure in North America. The European varieties degenerate and perish after a few years. A few years since, *Ribes aureum*, a native of Missouri, was cultivated and used as a stock for the European great-fruited varieties. The Californian *Ribes divaricatum* seems still better adapted to this purpose, and with proper culture it will undoubtedly produce fruits that will equal the European varieties in every respect.

The salmon-berry (*Rubus spectabilis*) and the Pacific thimble-berry (*Rubus Nutkanus*) are admirably adapted for making jams. Both have a peculiarly sweet and aromatic taste and very small seeds. They do not keep any length of time, and cannot be transported on account of their softness, but may be preserved, as is now extensively done by settlers in the woods of Oregon and British Columbia. The young sprouts of the salmon-berry are boiled, and are said to be better than spinach.

Besides these, we mention the large currant, *Ribes bracteosum*, which would probably prove a valuable shrub; the *Leña amarilla*, one of the four Californian barberries, which is frequently used in Mexico, but has not attracted the attention of horticulturists; and the Californian vine, *Vitis Californica*, which might be developed just as well as the eastern species of *Vitis aestivalis* and *V. riparia*, which have become the stock of renowned eastern vines.

It would be well if Californian horticulturists would not only direct their attention to foreign products and to endeavors to introduce them into California, but also attempt to cultivate the native plants of their State, many of which might become sources of important industries.

ELECTRICAL SCIENCE.

Improvements in Methods of Manufacturing Storage-Batteries.

MR. MADDEN, in the *Electrical World*, describes some recent improvements in the methods of manufacturing secondary batteries of the grid type. The plates of which these batteries are composed have been made heretofore by pasting by hand a mixture of red lead and sulphuric acid into hourglass-shaped holes in a cast-lead frame. Hand-labor in such work has two objections: it is expensive, and it does not give uniform results. The life of the cell, and its freedom from expensive depreciation, depend to a great extent on a perfect uniformity of condition all over the plate. To attain this, Mr. Madden has devised a machine that pastes the plate automatically, giving a uniform density to the red lead in each hole.

The red lead, mixed with the proper amount of dilute sulphuric acid, is fed to a mixing-screw of varying pitch, working in a cylindrical casing. The pitch of the screw is such that the mass is compressed as it nears an opening which has a length equal to